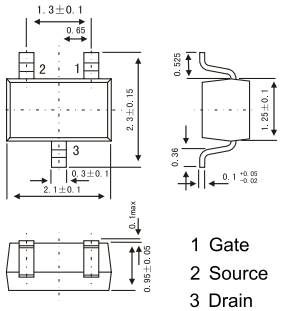
N Channel MOSFET

multicomp PRO

RoHS Compliant



1 Gate
2 Source
3 Drain

Features

- V_{DS} (V) = 60V
- I_D = 0.34 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 1.6Ω (V_{GS} = 10V)
- $R_{DS(ON)}$ <2.5Ω (V_{GS} = 4.5V)
- ESD Protected

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (Steady State)	Ta=25°C	I_D	310	mA
	Ta=85°C		220	
Continuous Drain Current (t < 5 s)	Ta=25°C		340	
	Ta=85°C		240	
Pulsed Drain Current (tp = 10 us)		I_{DM}	1.4	A
Gate−Source ESD Rating		ESD	900	V
Power Dissipation	Steady State	P_D	280	mW
	t < 5 s		330	
Thermal Resistance. Junction- to-Ambient	Steady State	R_{thJA}	450	°C/W
Thermal Resistance.Junction- to-Case	t ≤ 5 s	R_{thJC}	375	
Lead Temperature for Soldering Purposes		T_L	260	°C
Junction Temperature		T_J	150	
Storage Temperature Range		T_{stg}	-55 to 150	

Electrical Characteristics Ta = 25°C

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V T_J=25°C			1	uA
		VDS=60V, VGS=0V, TJ=125°C			500	
		VDS=50V, VGS=0V, TJ=25°C			0.1	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±10	uA
		V_{DS}=0V, V_{GS}=±10V			±450	nA
		V_{DS}=0V, V_{GS}=±5V			±150	
Gate Threshold Voltage (Note.1)	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	1		2.5	V
Static Drain-Source On-Resistance (Note.1)	$R_{DS(On)}$	V_{GS}=10V, I_D=500mA		1.19	1.6	Ω
		V_{GS}=4.5V, I_D=200mA		1.33	2.5	
On State Drain Current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	30			A
Forward Transconductance (Note.1)	g_{FS}	V_{DS}=5V, I_D=200mA		80		ms
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		24.5		pF
Output Capacitance	C_{oss}			4.2		
Reverse Transfer Capacitance	C_{RSS}			2.2		
Total Gate Charge	Qg	V_{GS}=4.5V, V_{DS}=10V, I_D=200mA		0.7		nC
Threshold Gate Charge	QgT			0.1		
Gate Source Charge	Qgs			0.3		
Gate Drain Charge	Qgd			0.1		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=25V, I_D=500mA,R_G=25Ω (Note.2)		12.2		ns
Turn-On Rise Time	t_r			9		
Turn-Off DelayTime	$t_{d(off)}$			55.8		
Turn-Off Fall Time	t_f			29		
Maximum Body-Diode Continuous Current	I_S				0.25	A
Diode Forward Voltage	V_{SD}	Is=0.2A, V_{GS}=0 V, T_J = 25°C		0.8	1.2	V
		Is=0.2A, V_{GS}=0 V, T_J = 85°C		0.7		

Note.1:Pulse Test: pulse width ≤ 300us, duty cycle ≤ 2%
Note.2:Switching characteristics are independent of operating junction temperatures

Typical Characterisitics

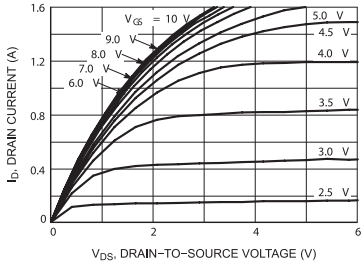


Figure 1. On −Region Characteristics

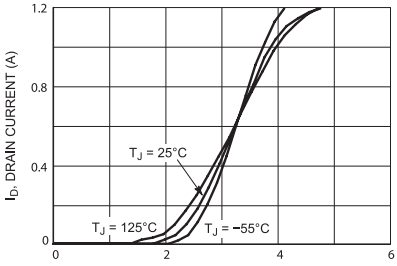


Figure 2. Transfer Characteristics

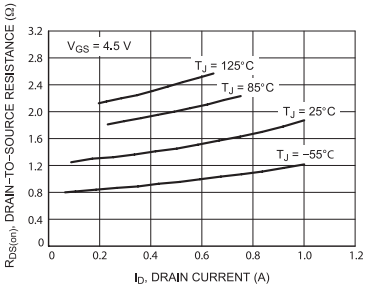


Figure 3. On −Resistance vs. Drain Current and Temperature

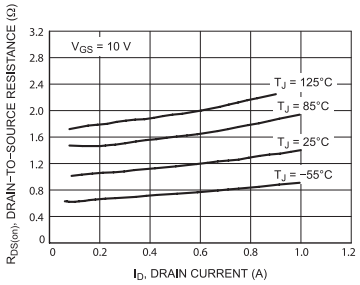


Figure 4. On −Resistance vs. Drain Current and Temperature

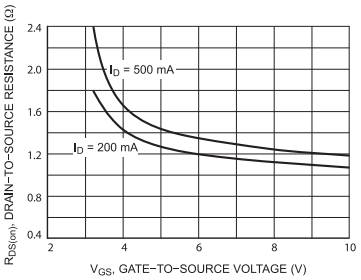


Figure 5. On −Resistance vs. Gate −to−Source Voltage

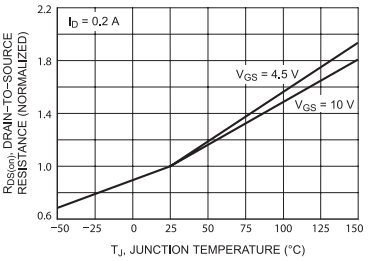


Figure 6. On −Resistance Variation with Temperature

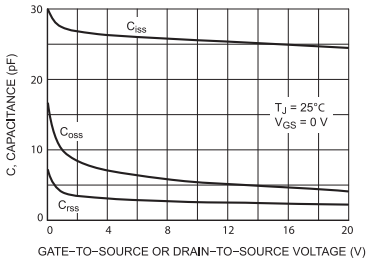


Figure 7. Capacitance Variation

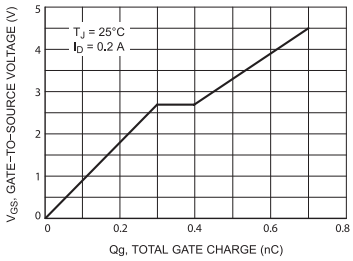


Figure 8. Gate−to−Source and Drain−to−Source Voltage vs. Total Charge

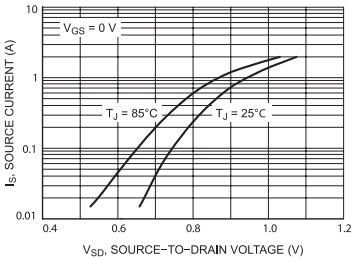


Figure 9. Diode Forward Voltage vs. Current

Part Number Table

Description	Part Number
N Channel Single MOSFET, SOT323, 60V, 0.34A	2N7002W